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SUBJECT: ArcelorMittal Indiana Harbor Long Carbon Property: Conceptual Site Model (CSM) and Human Health Risk Assessment (HHRA)

At your request, I have performed an expedited review of the *Conceptual Site Model (CSM) and Human Health Risk Assessment (HHRA)* (HHRA Report; August 2019) submitted by HaleyAldrich, Inc. on behalf of ArcelorMittal.

Project Objective

The Indiana Harbor Long Carbon property is a 92-acre parcel of land located within the ArcelorMittal Indiana Harbor East facility complex. The IHLC ceased operation in 2015 and the land parcel was separated from the RCRA Corrective Action obligations of the facility-wide Corrective Action. ArcelorMittal is marketing the IHLC for sale and redevelopment. In May 2018, ArcelorMittal submitted an RFI Data Sufficiency Evaluation to satisfy data quality objectives for the IHLC. EPA reviewed the Data Evaluation and determined that a verification sampling project should be performed as the next step to complete the Corrective Action.

The goals of the verification sampling are outlined on Page 2 of the Report: 1) Collect and analyze groundwater samples to determine if Contaminants of Concern are stabilized or decreasing; and 2) Collect and analyze soil samples to develop an HHRA to characterize residual risks at the IHLC parcel.

EPA identified three primary data gaps that needed to be addressed by the verification sampling:

- 1) Groundwater conditions near the known historical source areas.
- 2) Soil COC concentrations to be used for evaluating direct contact exposure to soil.
- 3) Potential impact on indoor air quality of buildings from vapor intrusion of subsurface contaminants.

In May 2019, EPA reviewed the results of the verification sampling, and directed ArcelorMittal to proceed with development of the CSM and HHRA Report.

Please find below my comments, questions, and recommendations on the remainder of the Report.

Section 2.3.1 On-Site Groundwater

The Report describes the potential for exposures to groundwater resulting from current and future activities at the IHLC. Any utility or construction activity under current conditions is covered by

Institutional Controls directing the permitting and worker protection requirements for excavating into groundwater zones and for necessary de-watering activity.

For future conditions which assumed that Institutional Controls would not be in place, construction workers performing excavation and redevelopment are assumed to have contact with groundwater. In the previous Phase II RFI, the Report explains that risk-based screening levels were developed for direct contact with groundwater. For contact with groundwater during excavation projects, direct consumption of drinking water is not expected and could be prevented. The Report states that the only exposure pathway to groundwater contaminants would be through dermal exposure (Page 5). However, that assumption is not fully accurate. Construction workers could be exposed to volatile contaminants migrating from groundwater and emanating as vapors in trench areas during construction. It is noted that positive detections of benzene, tetrachloroethylene, and trichloroethylene VOCs were found in groundwater samples. Consequently, the HHRA should evaluate the significance of this potential exposure pathway. The evaluation should include: 1) an analysis of depth to groundwater in relation to the probable depth of excavation for subsurface maintenance and construction for redevelopment; 2) modeling for migration of VOC contaminants into an open trench where groundwater is encountered. (See additional comments below.)

Section 2.3.8 Indoor Air

The HHRA states that no indoor air measurements for VOC contaminants have been performed in the site buildings at IHLC during the RFI. But no significant impacts from vapor intrusion would be expected based on the location of groundwater samples and the size of buildings and the expected air exchange rates. The Report concluded that the adverse impact of vapor intrusion into buildings would be mitigated by dilution. It is noted (Page 9) that EPA apparently expressed a verbal agreement that some mitigating factors for the vapor intrusion pathway exist at the site. However, the Report does not present any objective measurements of the mitigating factors. For the purpose of supporting the conclusions on the vapor intrusion pathway and for addressing future site use, the HHRA should be expanded to address the mitigating factors: 1) what evidence supports a finding that no groundwater plumes of VOC contaminants exist under any on-site buildings? 2) what magnitude of air exchange rates is associated with the probability that vapor intrusion can be discounted? 3) what is the likelihood that high air infiltration and exchange rates can be maintained in all sections of very large buildings at IHLC? and 4) what specific criteria outlined in the OSWER Technical Guide (2015) support the conclusion that the vapor intrusion pathway can be discounted at the IHLC buildings.

Section 2.3.9 Outdoor Air

The Report correctly states that the potential for exposure to significantly contaminated outdoor air (ambient air) depends on the presence of contaminated soils or shallow groundwater in areas where current or future receptors could be present. The Report states that no direct measurements of site contaminants in air were made for the RFI, but current soil and groundwater data show contaminant levels that are far too low to be associated with any adverse outdoor air inhalation impact. No specific contaminant levels in shallow soil or groundwater are presented to support that conclusion. EPA is under the impression that the risk-based screening levels for soil contaminants used in the RFI and the HHRA have a component for evaluating the inhalation pathway for transport of VOCs from soil to ambient air. The HHRA should clarify which exposure pathways are incorporated into the soil screening levels applied for the RFI and HHRA.

Section 4.1 Potential Exposure Pathways

For the table on Page 13, the Report should provide an explanation for why “vapor inhalation” should not be included in the groundwater Exposure Pathways for the Construction Worker. EPA noted that the data evaluation described the detection of benzene, tetrachloroethylene, and trichloroethylene in groundwater analyzed for the RFI and/or verification sampling.

Section 6.3.1 Hazard Identification

The Report states that analytical detection limits for thallium and arsenic are higher than the industrial RSLs based on the selected cancer risk and noncancer hazard targets. But both constituents were retained as COPCs and the analytical detection limits were included in the derivation of the EPCs. The Report should explain how detection limits were used to derive EPC values for those two constituents and other constituents where applicable.

Table 5 and Appendix D-3

Table 5 shows a comparison of maximum groundwater COC concentrations to Construction Worker Screening Levels. The Construction Worker Screening Levels were apparently derived for Appendix D-3. However, this reviewer could not locate those Screening Levels in Appendix D-3. The Report should be revised or updated as necessary.